

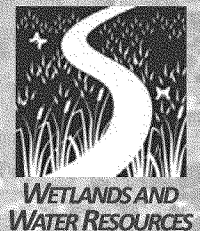
Suisun Marsh Today: A Reflection of Drivers of Change

Stuart W. Siegel, PhD, PWS

Wetlands and Water Resources, Inc.

www.swamptthing.org

**Suisun Marsh in the 21st Century:
A Landscape of Change & Opportunity
23 May 2011, UC Davis**



Questions

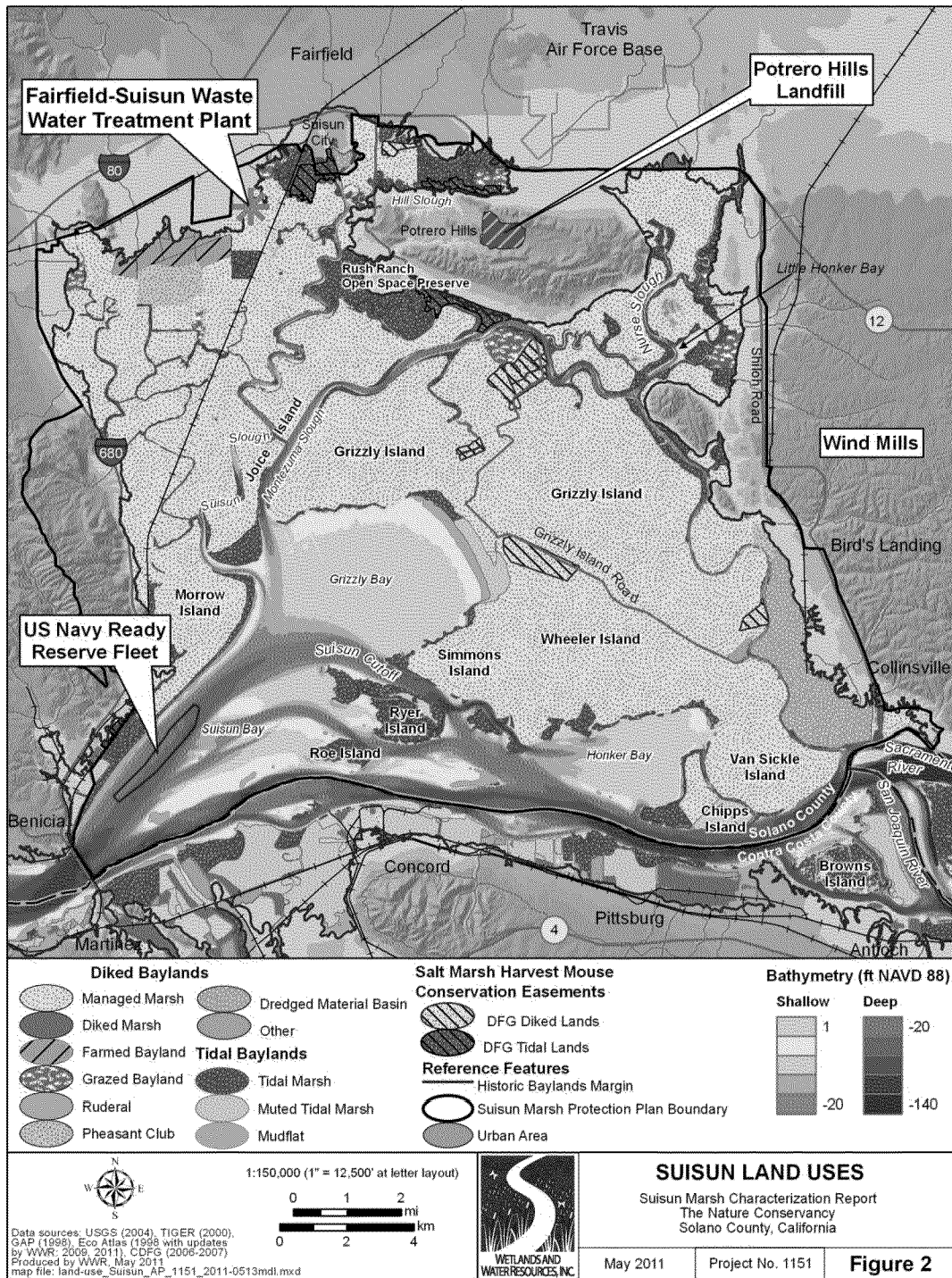
In the context of future management and restoration in Suisun...

- 1) What are the major features of Suisun Marsh today?
- 2) What are the major historical and current drivers of today's Suisun Marsh?
- 3) What are the major drivers of future conditions?

Questions

In the context of future management and restoration in Suisun...

- 1) What are the major features of Suisun Marsh today?**
- 2) What are the major historical and current drivers of today's Suisun Marsh?
- 3) What are the major drivers of future conditions?



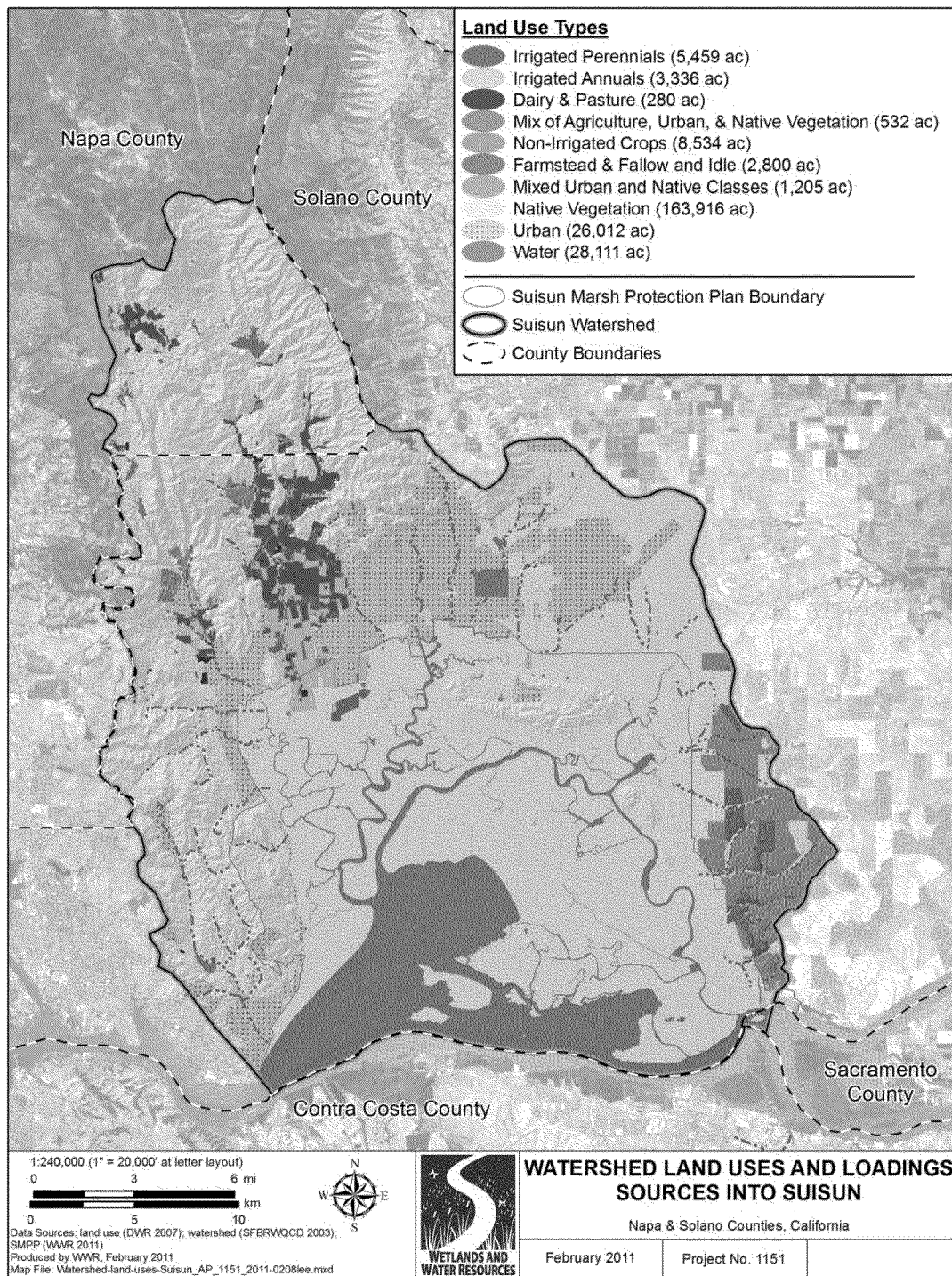
Suisun Land Use

Within the Marsh

- ☐ Diked managed wetlands (mostly private, large DFG public)
- ☐ SMHM conservation areas
- ☐ Dredged material reuse
- ☐ Grazing
- ☐ Potrero Hills landfill
- ☐ Fairfield-Suisun Wastewater Treatment Plant
- ☐ Mothball Fleet

Immediately surrounding Suisun

- ☐ Fairfield, Suisun City, Travis AFB
- ☐ Wind Farms
- ☐ Dry farming (oat, hay, sheep)

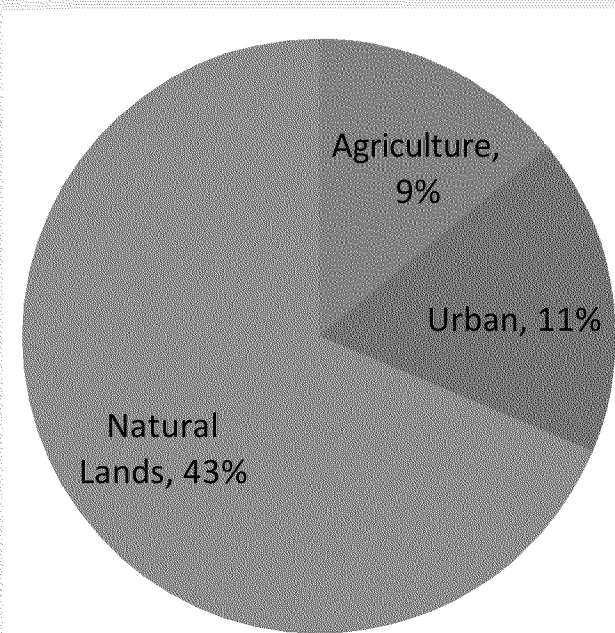


Watershed Land Use

Total watershed ~150,000 ac

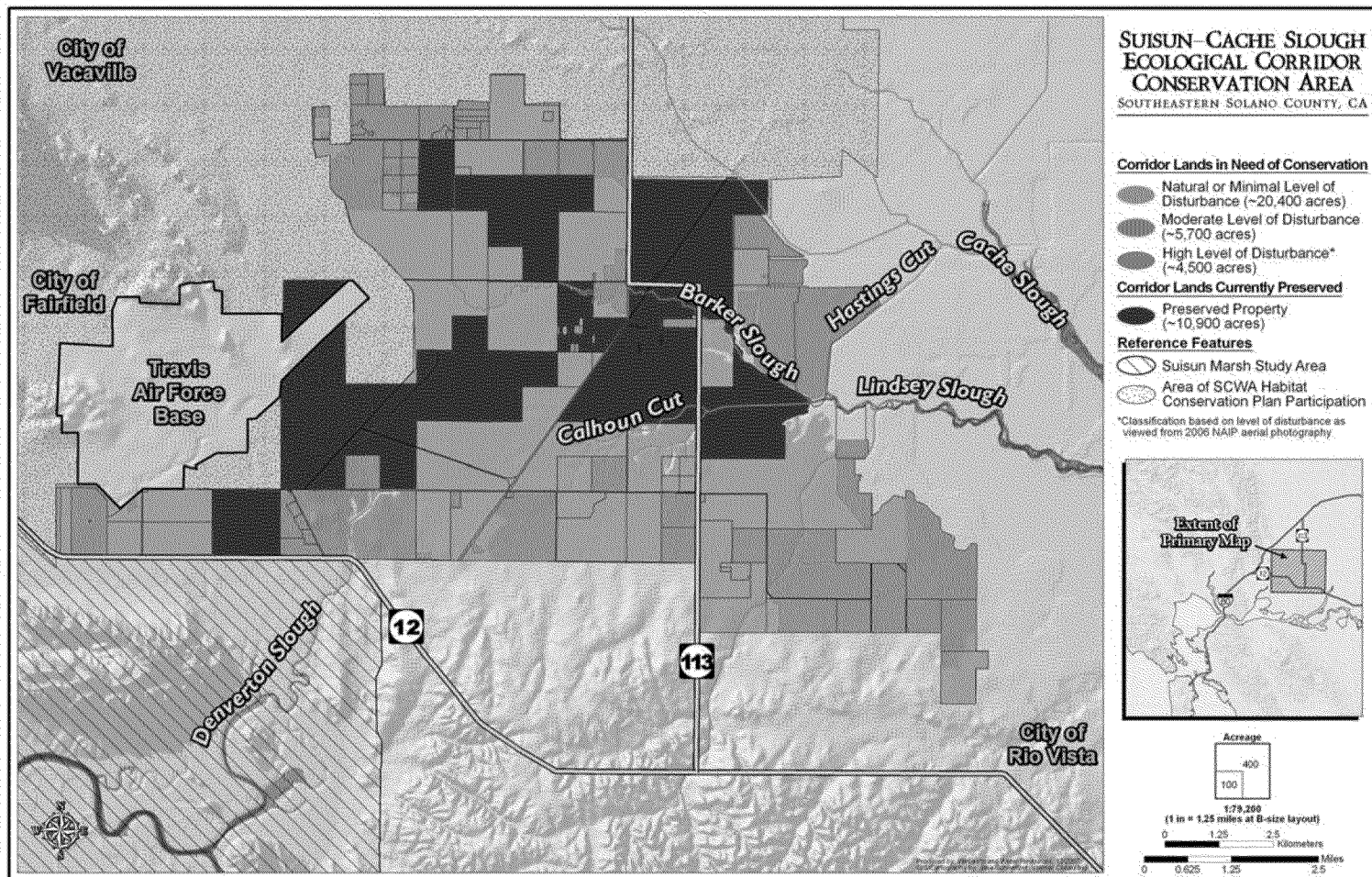
- Urban (~26,000 ac)
- Agricultural (~21,000 ac)
- Woodlands and grasslands (~103,000 ac)

** All stormwater enters untreated*

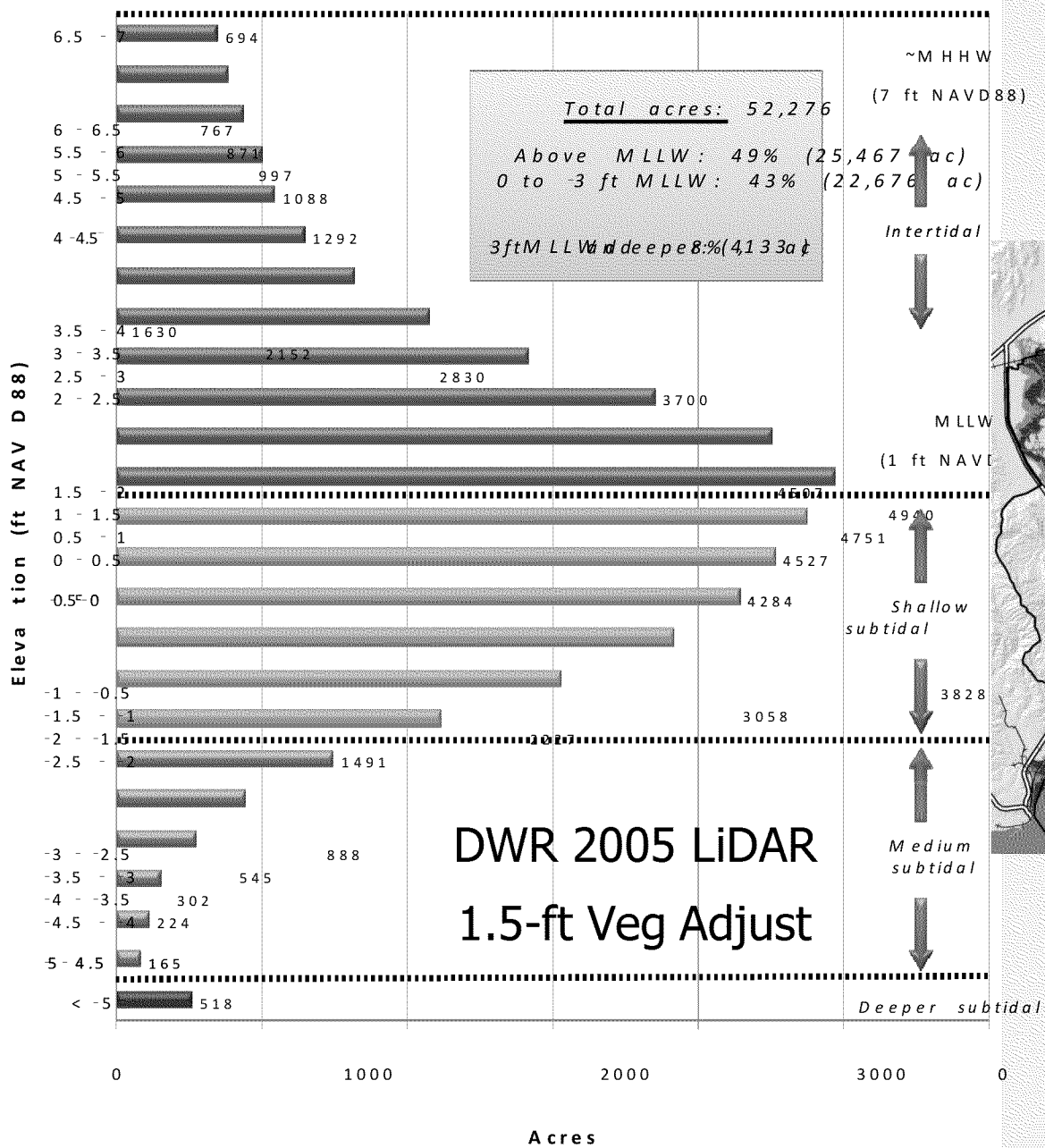


Linkage to Delta/Cache Slough

- Grasslands / seasonal wetlands / vernal pool complexes including Jepson Prairie
- Variable degrees of existing conservation protection and condition
- Wildlife corridor, sea level rise accommodation

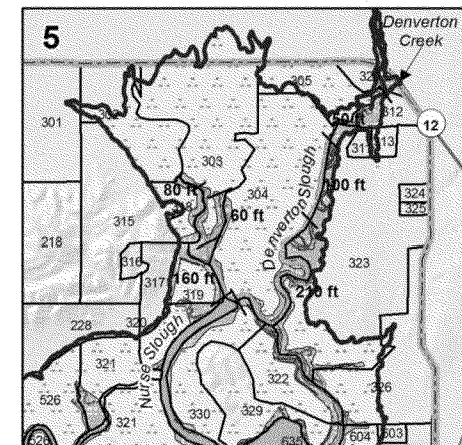
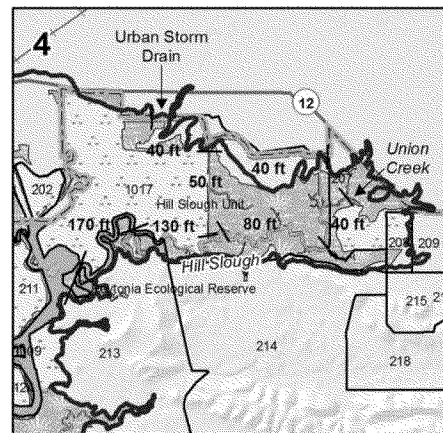
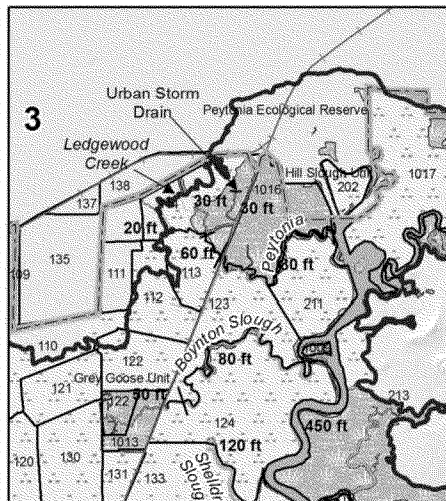
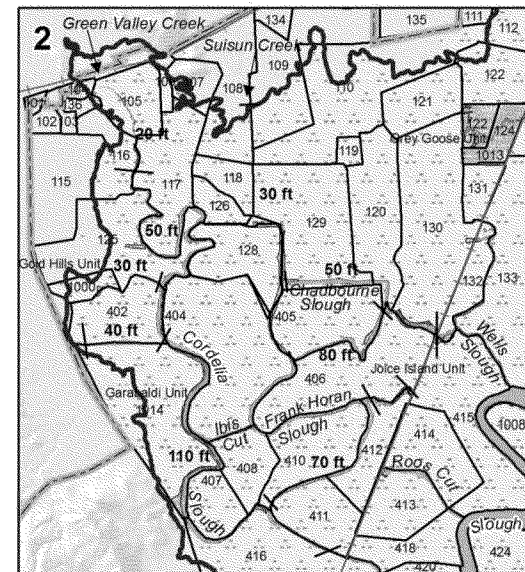
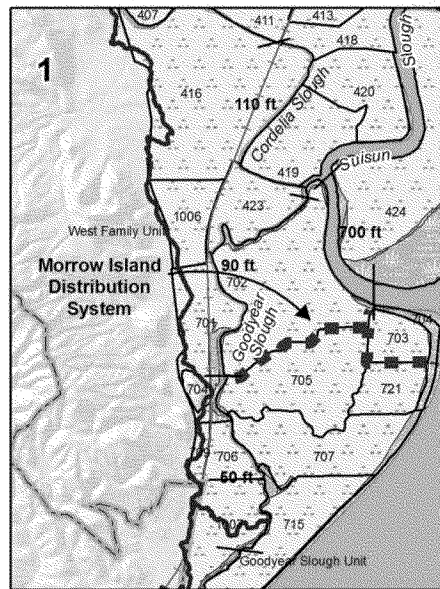
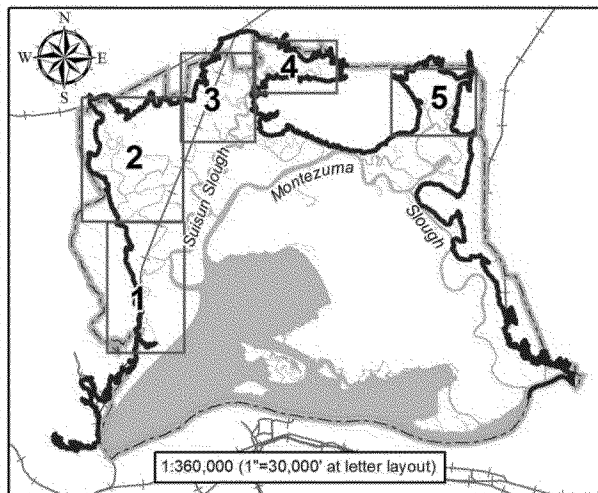


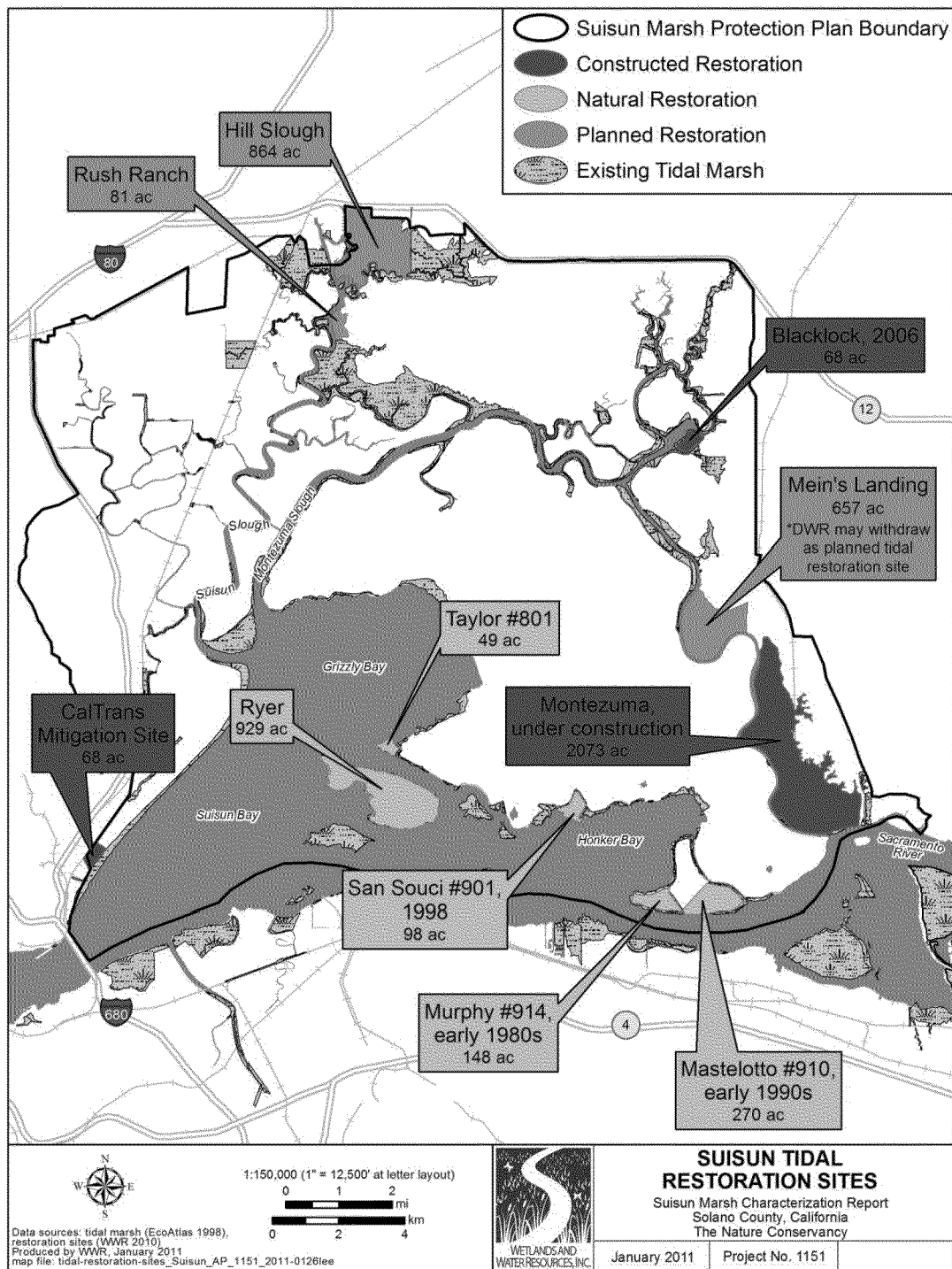
Diked Lands Elevation – Centered MLLW!



Water Quality – Low DO, MeHg

- Some documented history of low dissolved oxygen in certain perimeter sloughs
- Conditions that support low DO also lead to methylmercury production





Restoration Efforts

Actively Restored

- ☐ Blacklock
- ☐ Montezuma
- ☐ Caltrans mitigation site
- ☐ DFG Goodyear Slough (not shown)

Naturally restored

- ☐ Chipps Island (910, 914)
- ☐ San Souci
- ☐ Ryer Island
- ☐ 801

Planned restoration projects

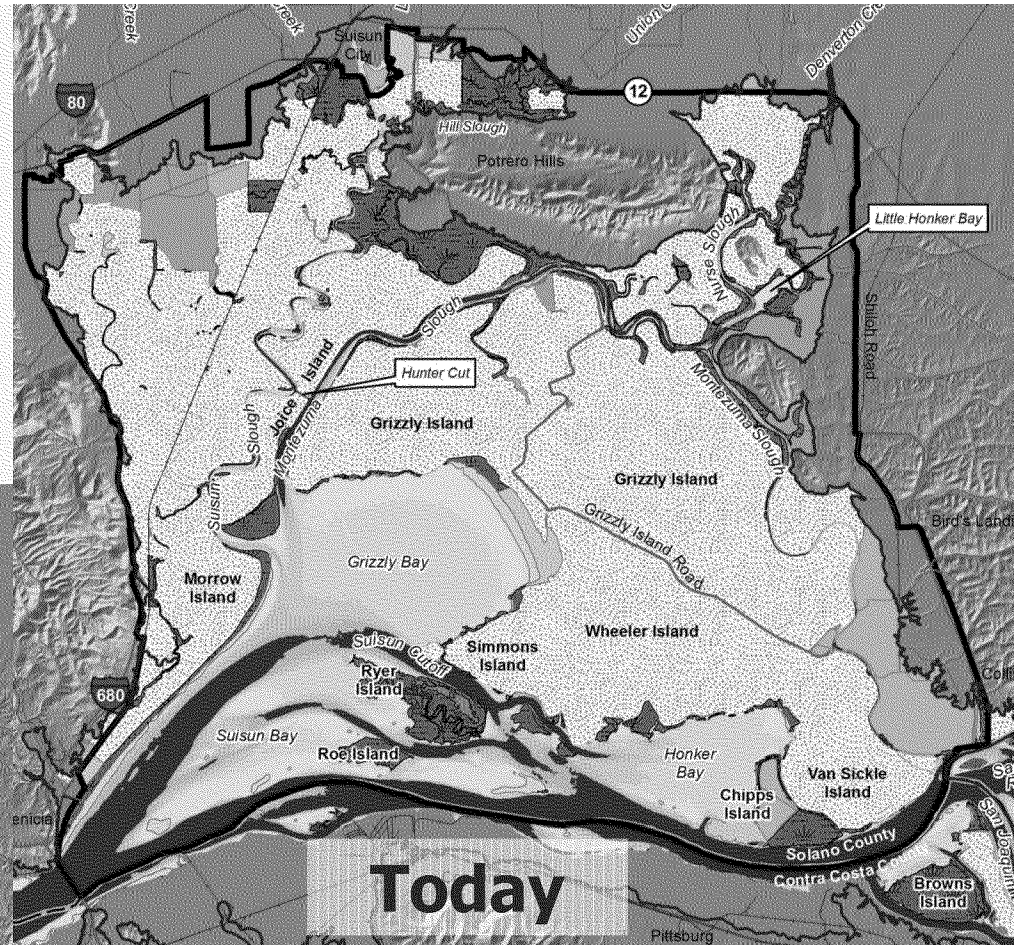
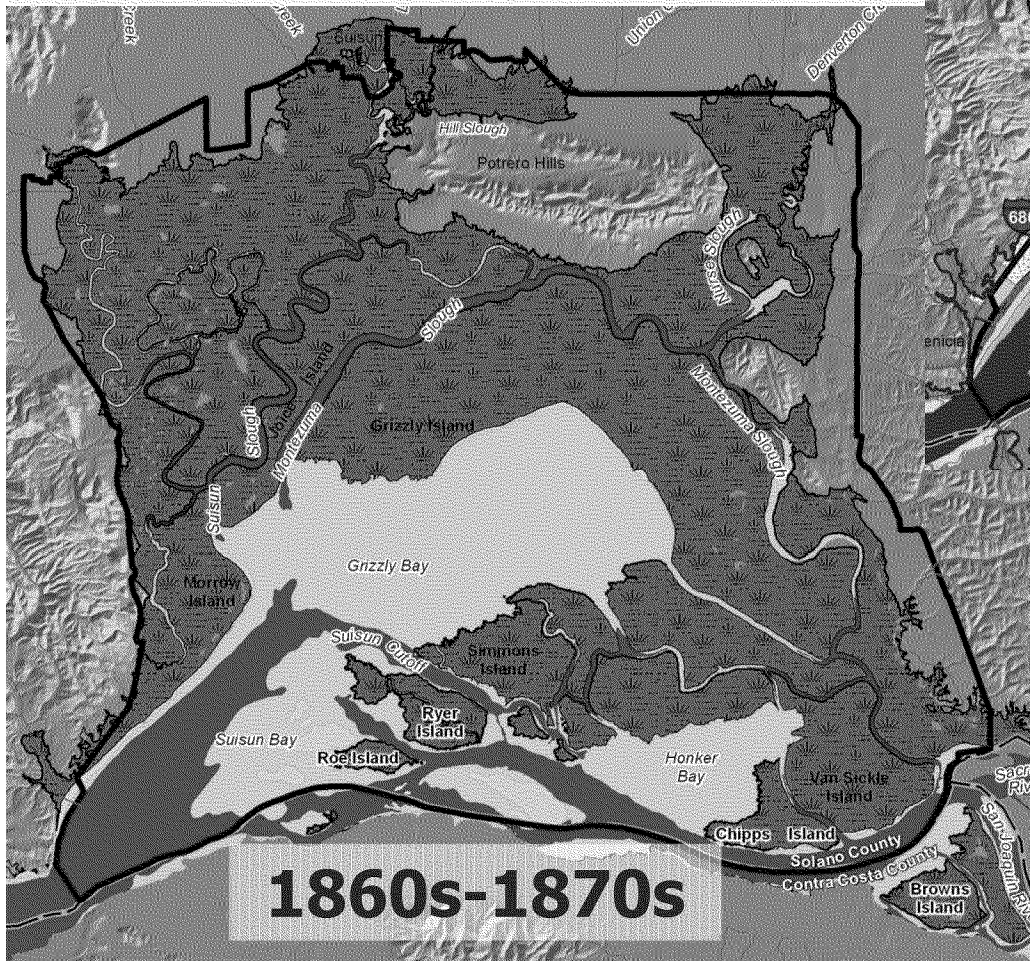
- ☐ Hill Slough
- ☐ Mein's Landing
- ☐ Rush Ranch

Questions

In the context of future management and restoration in Suisun...

- 1) What are the major features of Suisun Marsh today?
- 2) What are the major historical and current drivers of today's Suisun Marsh?**
- 3) What are the major drivers of future conditions?

Diking, Hydraulic Mining Debris, Railroad



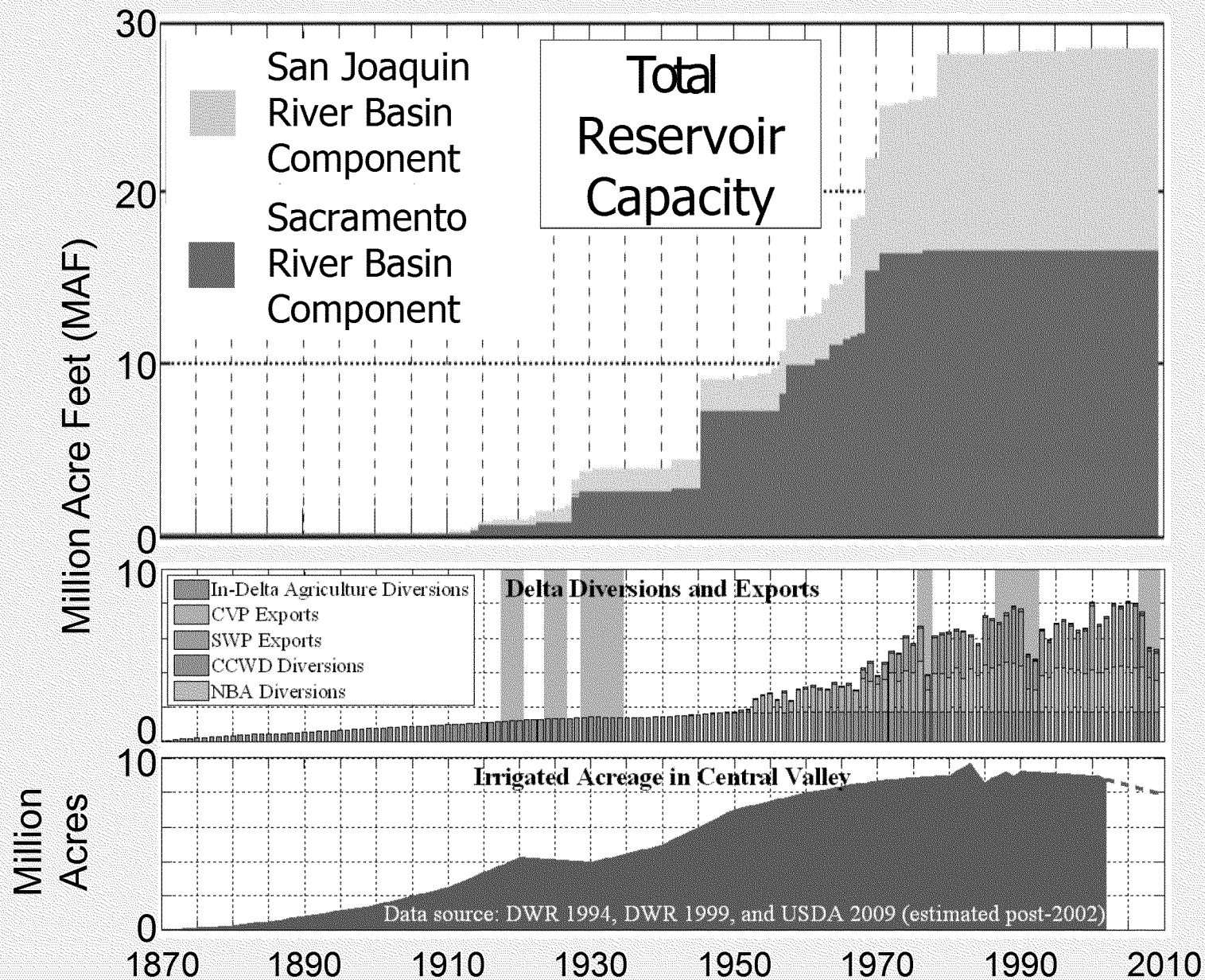
Data: SFEI EcoAtlas, WWR

2 Billion Cubic Yards of Sediment Washed Downstream 1853 - 1874



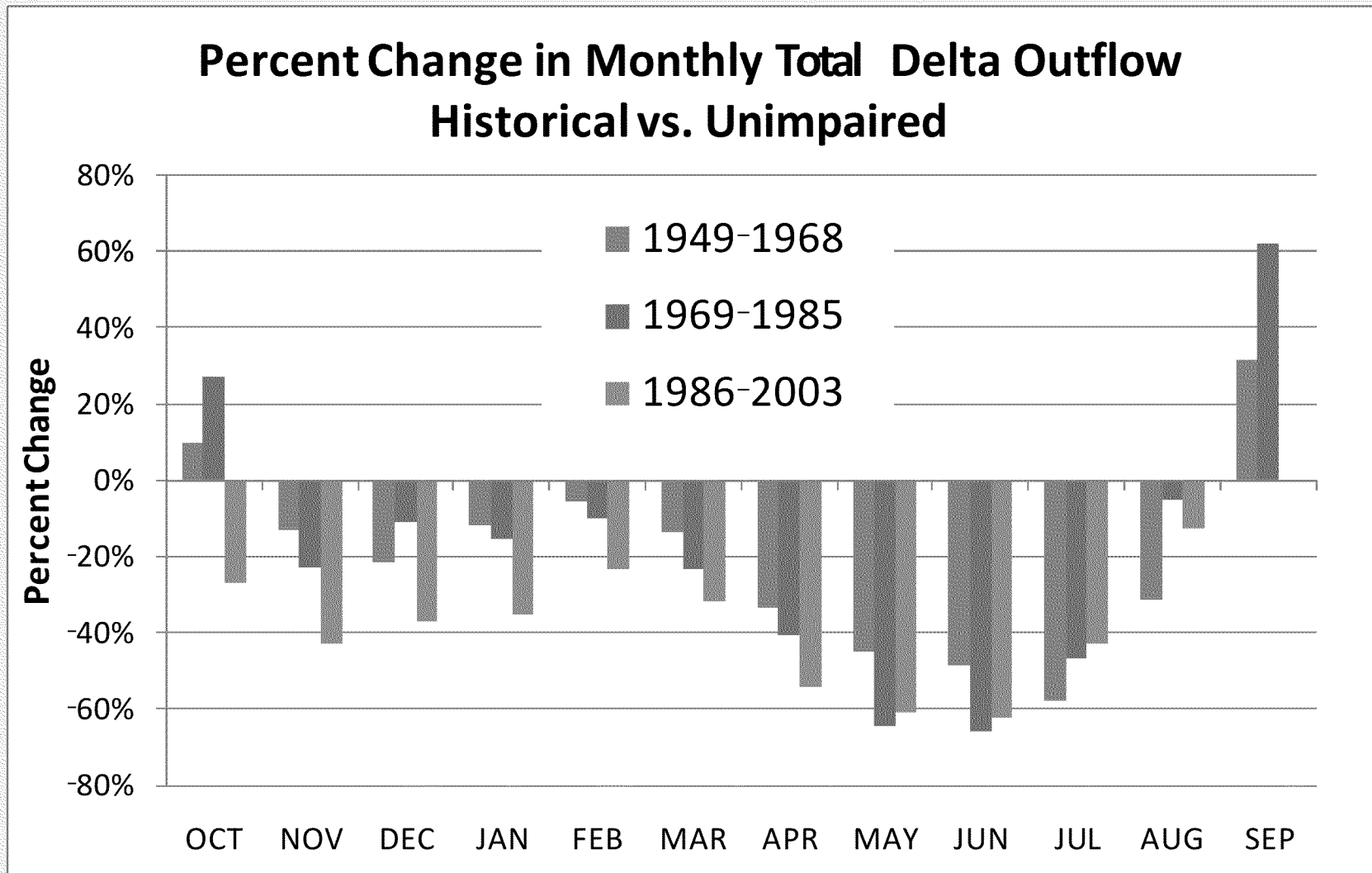
Data: Gilbert 1917; Photo: www.museumca.org

Storage, Diversions, Exports, Agriculture



Data: Contra
Costa Water
District

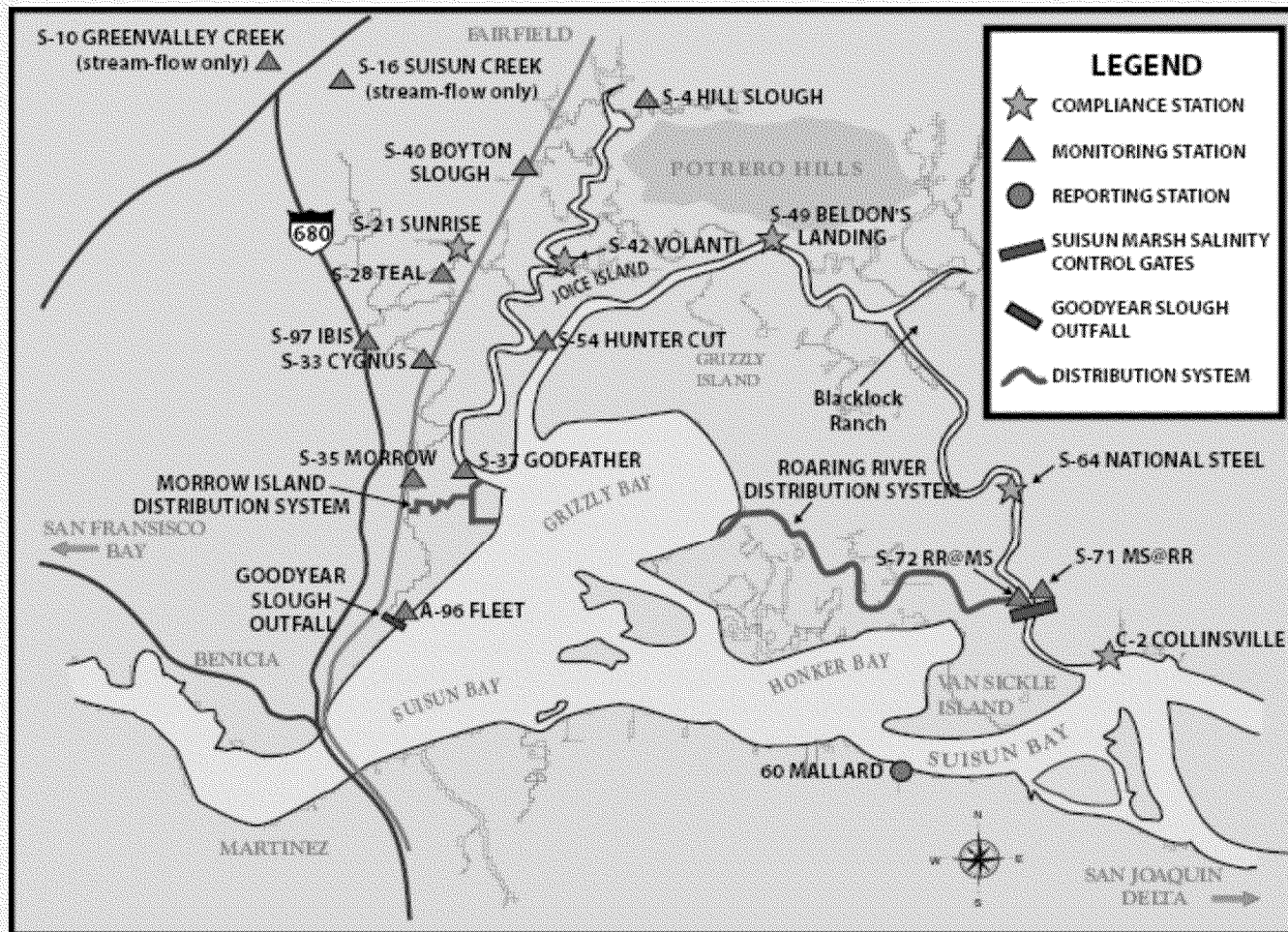
Reducing Estuarine Variability: Decreasing Winter, Spring and Summer Flows, Increasing Fall Flows



Data: UCD Watershed Science Center, from DWR DAYFLOW data (courtesy Bill Fleenor)

DWR Suisun Facilities

- ☐ Suisun Marsh Salinity Control Gates
- ☐ Morrow Island Distribution Facility
- ☐ Roaring River Distribution Facility
- ☐ Goodyear Slough Outfall
- ☐ Morrow Island Distribution Facility
- ☐ Goodyear Slough Outfall



Questions

In the context of future management and restoration in Suisun...

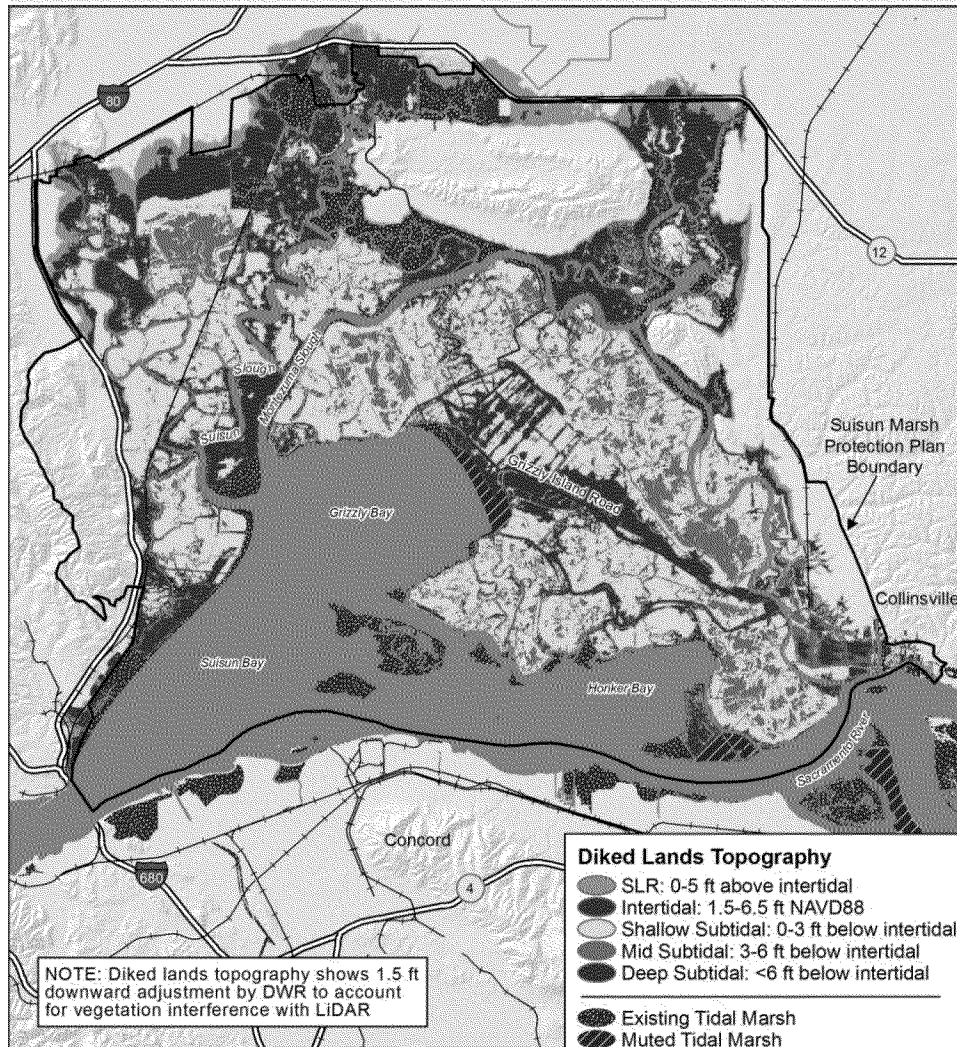
- 1) What are the major features of Suisun Marsh today?
- 2) What are the major historical and current drivers of today's Suisun Marsh?
- 3) What are the major drivers of future conditions?**

Future Drivers of Change

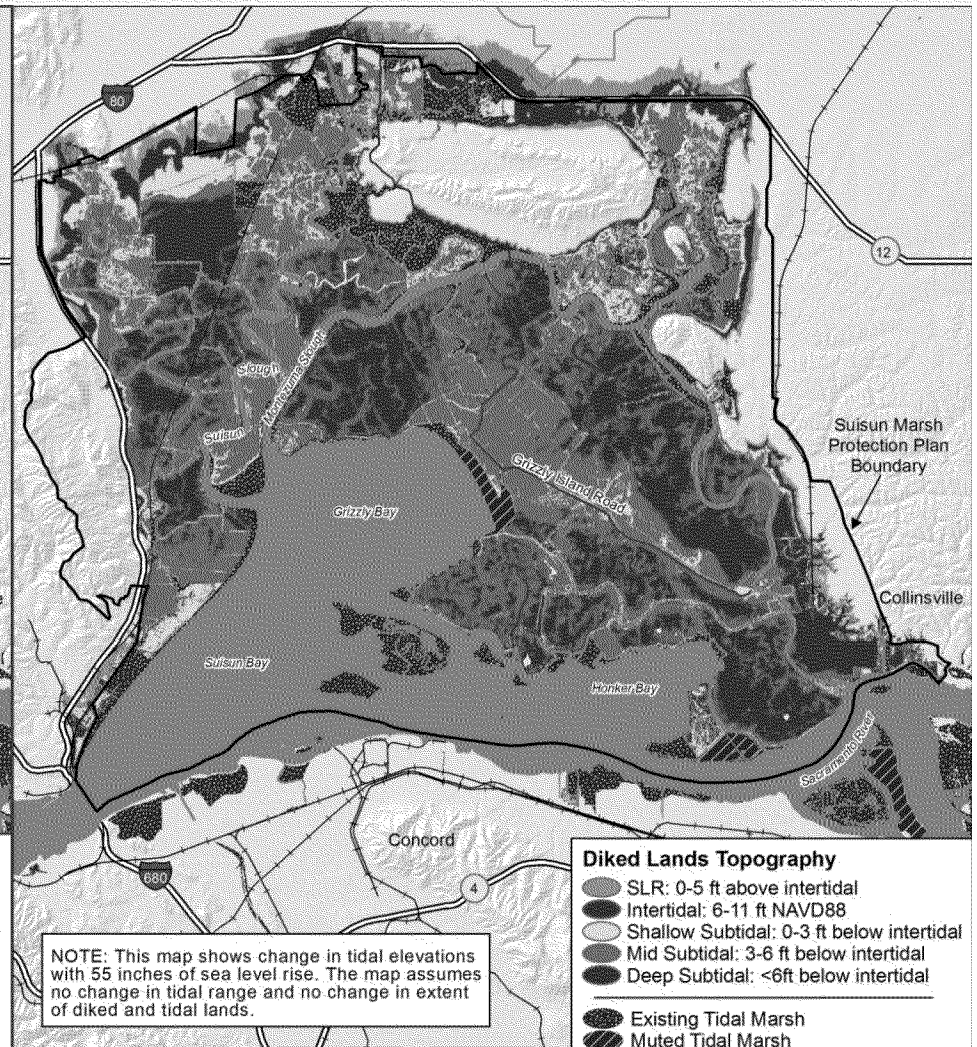
- 1) **Sea level rise**
- 2) **Large-scale tidal restoration**
- 3) Reductions in regional sediment supply
- 4) Delta water operations
- 5) Salinity management of Suisun Marsh
- 6) Land use change
- 7) Invasive species
- 8) Changes in storm frequency and intensity

Sea Level Rise: A View of 2100 Without Intervention

A) Present tidal elevations



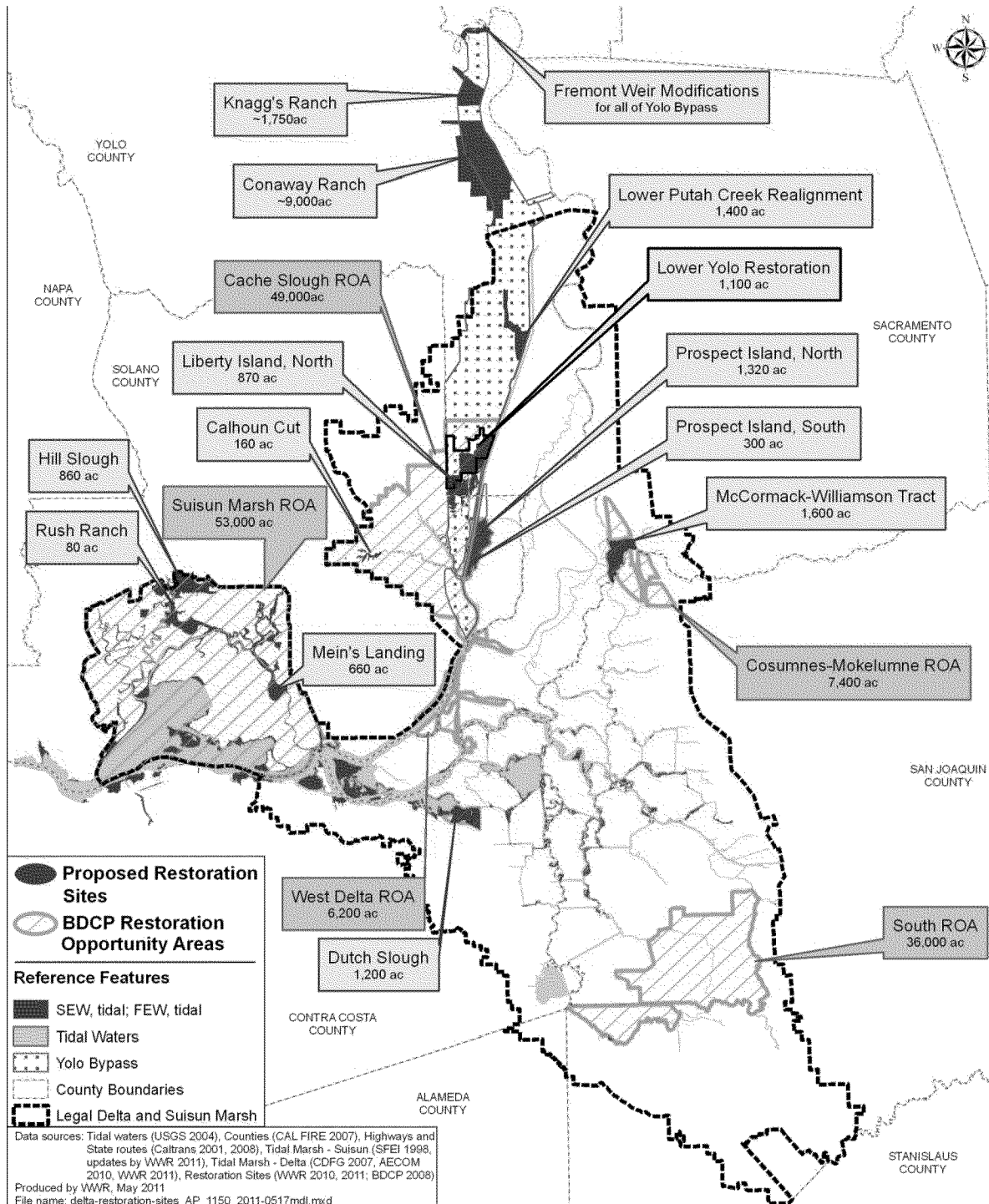
B) With 55" of SLR at 2100



Large-Scale Tidal Restoration: Marsh and Shallow Open Water

Regional Plans Calling for Suisun and Delta Restoration:

- ☐ Suisun Marsh Plan
- ☐ Delta Plan
- ☐ ERP Stage 2 Conservation Strategy
- ☐ Tidal Marsh Recovery Plan
- ☐ Bay Delta Conservation Plan
- ☐ Biological Opinions (Delta smelt, salmonids)



A black and white photograph of a wetland landscape. In the foreground, tall, thin grasses grow on the left side, some leaning over a calm body of water. The water reflects the sky and the surrounding vegetation. In the background, a dense line of reeds or tall grasses stretches across the horizon. The sky is filled with soft, textured clouds.

THANK YOU !

Browns Island Oct 2003

Photo: S. Siegel